

SUSTAINABILITY

One important item to consider in any plan that will utilize the Valley's non-potable water resource is the long-term sustainability of the supply. Since over-irrigation is the primary source of the shallow aquifer and the perennial surface water flow, it would appear that as the population in the Valley continues to increase, so will the continued recharge to the shallow aquifer system.

Over the past several years SNWA has been promoting an aggressive water conservation campaign. The results are beginning to be measured. Water conservation achieved in 1995 by the Las Vegas Valley community was estimated at 9 percent (Fortier, oral communication, 1996). A continued increase in the amount of water conservation in the Valley may have an impact on the long-term supply of non-potable water. SNWA Resources is currently in the process of modifying the existing ground-water flow model to further evaluate shallow ground water as a resource. Simulations will be conducted reducing secondary recharge, while increasing the use of the shallow system, to evaluate potential reductions in volume.

SUMMARY

There are two primary sources of non-potable water in the Las Vegas Valley; shallow ground water and surface-water wash flows. Shallow ground water is present throughout much of the urbanized part of the Las Vegas Valley. Static water levels range from approximately one and one-half feet to thirty feet below land surface. The aquifer characteristic testing that was done by Western Technologies and Converse Consultants indicates that the shallow zone provides low yields, generally ranging from 1 to 30 gpm. Therefore, the feasibility of obtaining enough shallow ground water for the desired purpose is site specific.

The quantity of water available at the downstream reaches of Flamingo Wash, Las Vegas Wash, and Duck Creek are 5.35 cfs, 1.57 cfs, and 3.50 cfs, respectively. The potential use of wash water for large-scale turf irrigation is currently being investigated by the SNWA Resources staff. Issues being reviewed include the environmental, economic, and engineering feasibility.

On average, TDS concentrations in the shallow system and in the washes tend to increase in the downstream or downgradient direction. In some locations boron and NO_3 (as N) concentrations are elevated. Although the salinity levels of both sources of water are elevated, it may be possible to use the water for large-scale turf irrigation by either diluting or treating the water.

As pointed out by Brothers and Katzer (1988), there are several turfed areas in the Las Vegas Valley that might benefit from using non-potable water for turf irrigation. Dr. Dale Devitt's research shows that through proper irrigation practices, water with an electrical conductivity of up to 6,000 $\mu\text{S}/\text{cm}$ can be used as a supplemental irrigation source for tall fescue and bermudagrass (Dean, et al, 1995).

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